

Claims

- [c1] 1. A device for delivering lubricant to at least one lubrication point (17), said device comprising:
a reservoir (9) for lubricant (10a) connected to the lubrication point (17) and control means (30) for controlling the delivery of lubricant to the lubrication point (17) depending on the pressure in an hydraulic circuit (26) connected to said device.
- [c2] 2. The device as recited in claim 1, wherein said control means (30) further comprises an elastic element (24) configured to be compressed in the event of a pressure increase and to expand in the event of a pressure drop in the hydraulic circuit (26), and said elastic element (24) being arranged, in the event of a pressure drop, to bring about the delivery of lubricant to the lubrication point (17).
- [c3] 3. The device as recited in claim 2, further comprising:
an hydraulically loaded piston (25) connected to the hydraulic circuit (26) and arranged to act upon the elastic element (24) in the event of an hydraulic pressure variation.
- [c4] 4. The device as recited in claim 3, wherein movement of the hydraulically loaded piston (25) in one direction is limited by a stop shoulder (27).
- [c5] 5. The device as recited in claim 1, further comprising:

a valve arrangement (16) connected between the reservoir (9) and the lubrication point (17) for controlling the delivery of lubricant.

- [c6] 6. The device as recited in claim 5, wherein the elastic element (24) is arranged to open a second valve (20) forming part of the valve arrangement in the event of a pressure drop.
- [c7] 7. The device as recited in claim 5, wherein the valve arrangement (16) further comprises a chamber (18) connected to the reservoir (9) configured for containing lubricant (10a) and flow-control means (19, 20) for producing a one-way flow of lubricant (10a, 10b) through said chamber (18).
- [c8] 8. The device as recited in claim 7, wherein said flow-control means (19,20) further comprises:
a first non-return valve (19) connected to the reservoir (9);
a second valve (20) in the form of a non- return valve arranged at an inlet to a duct (21) connected to the lubrication point (17); and
said chamber (18) being arranged between said first non-return valve (19) and said second non-return valve (20).
- [c9] 9. The device as recited in claim 1, further comprising:
delivery control means (28) for controlling the quantity of lubricant delivered to the lubrication point (17) in a lubrication cycle.
- [c10] 10. The device as recited in claim 1, further comprising:

a display means for displaying the level of lubricant (10a) in the reservoir (9) is located on a pump piston (12) arranged in the reservoir.

[c11] 11. The device as recited in claim 10, wherein said display means further comprises a dipstick (14) fixed to the pump piston and configured to follow the movement of the pump piston (12).

[c12] 12. The device as recited in claim 10, wherein said reservoir (9) for lubricant (10a) is topped up via a nipple (13) fitted to the reservoir (9).

[c13] 13. The device as recited in claim 10, wherein said hydraulic circuit (26) is connected to a hydraulic cylinder (30) and that the lubrication point consists of a bearing (17) arranged at the bearing point (4) of the hydraulic cylinder (30).

[c14] 14. A method for automated delivery of lubricant to a pivot connection between an hydraulic piston-cylinder arrangement and an incorporating piece of construction equipment, said method comprising:
automatedly delivering lubricant (10a) from a lubricant reservoir (9) to the pivot connection between the piston-cylinder arrangement and the incorporating piece of construction equipment based on a pressure variation in the piston-cylinder arrangement.

[c15] 15. The method as recited in claim 14, further comprising:

delivering lubricant (10a) from a lubricant reservoir (9) to the pivot connection based upon detection of a predetermined duty cycle of the piston-cylinder arrangement.

- [c16] 16. The method as recited in claim 15, wherein said predetermined duty cycle of the piston-cylinder arrangement includes a plurality of hydraulically actuated extensions and retractions of the piston-cylinder arrangement.
- [c17] 17. The method as recited in claim 16, wherein said detection of a predetermined duty cycle of the piston-cylinder arrangement is based on sensed hydraulic pressure changes in the piston-cylinder arrangement.
- [c18] 18. The method as recited in claim 14, further comprising: delivering lubricant (10a) from a lubricant reservoir (9) to the pivot connection based upon pressure-pulse detection in the piston-cylinder arrangement representative of an extension-contraction cycle of the piston-cylinder arrangement.
- [c19] 19. The method as recited in claim 14, further comprising: controlling the delivery of lubricant to the pivot connection to times when balanced distribution of lubrication is facilitated based on the relative orientation existing between the piston-cylinder arrangement and the incorporating piece of construction equipment.